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TWO EXTRAORDINARY NEW BLIND NEMATOGNATH FISHES FROM THE RIO NEGRO, REPRESENTING A NEW SUBFAMILY OF PYGIDIIDAE, WITH A REARRANGEMENT OF THE GENERA OF THE FAMILY, AND ILLUSTRATIONS OF SOME PREVIOUSLY DESCRIBED GENERA AND SPECIES FROM VENEZUELA AND BRAZIL

BY

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Among the many interesting fishes obtained by the late Dr. Carl Ternetz in Brazil and Venezuela during 1923, 1924, and 1925, none is more remarkable than two singular species of minute blind pygidiids collected at the São Gabriel Rapids of the Rio Negro. A third genus with functional eyes but very nearly as peculiar was described by the writer in 1927, and these three are here placed together in a new subfamily, differing markedly from all other members of the family.

The collections were made by Dr. Ternetz under the direction of the late Dr. Carl Eigenmann for Indiana University. These as well as all of the other fish collections of that institution are now the property of the California Academy of Sciences.

November 7, 1944.

GLANAPTERYGINAE Myers, new subfamily

Dorsal fin absent. Anal fin present or absent. Pectoral and pelvic fins reduced or absent. Nasal, rostral, and maxillary barbels present. No mental barbels. Cheeks without spines. Eyes very small and functional, or vestigial, or absent. Mouth small, with little or no lateral gape, not sucker-shaped. Teeth conical, apparently in a single series in each jaw. Three minute species, all of them known only from the vicinity of São Gabriel Rapids, Rio Negro, Brazil.

Pygidianops Myers, new genus

Eyes apparently absent, no vestige of their presence visible externally. Body rather compact and laterally compressed; depth 6 in standard length. Snout flattened, shovel-shaped, merging at the sides into the connective membrane of the rostral and maxillary barbels. Nasal, rostral and maxillary barbels all with a stiff core and a fringing wing of membrane. A vestigial pectoral fin of one ray and fringing web, much like the barbels. No pelvic fins. Caudal fin well developed. Anal fin present. No dorsal fin, but a narrow rayless membrane down dorsum from nape to caudal. A similar membrane from behind anal fin to caudal.

Gill openings restricted to lower part of sides, below level of pectoral fin. Gill membranes forming a free fold across isthmus, attached to the latter at a single median line.

Mouth a transverse slit, narrow, inferior, far forward, slightly posterior to insertion of rostral barbel, without complicated lip structure or sucking disk. Teeth comparatively large, apparently conical and in a single close set series in each jaw. A constriction across lower surface of head, behind insertion of maxillary barbel. Myomeres very conspicuous.

Genotype the following species.

Pygidianops eigenmanni Myers, new species

Plate 52, fig. 1; Pl. 53, figs. 3, 4, 5

Anal fin 5. Pectoral fin 1. Myomeres about 42 to caudal base. Caudal fin rounded. Depth 6 in standard length, body well compressed. Head 6.25. Distance from anal origin to caudal base contained 2.5 times in standard length. The barbels are stiffened by a cartilaginous core, and the nasal ones stand erect. A band of peculiar reticulate tissue from pectoral fin to above anal fin and another along base of dorsal fringe. A conspicuous papilla at anus.

There is a series of fine bones faintly visible in the opercular region, apparently branchiostegals. Two others, very similar, are seen above the pectorals. I have not dissected the types (only two or three of which are adult) in order to determine the relations of

these bones, but a study of a stained and cleared example has been made by Miss Gloria Hollister, and it is hoped that her anatomical notes will be published.

White, without color.

Holotype: No. 11,120 C. A. S., Ichthyol., 23 mm. in standard length, from **rock pools below São Gabriel Rapids, Rio Negro, Brazil,** Feb. 1, 1925, Dr. Carl Ternetz.

Besides the type there are 13 other specimens ranging from 12 to 21 mm. standard length. Three of these 13 are in the collections of Stanford University.

It is especially appropriate that a blind fish, and particularly a blind fish from South America, be named in memory of the late Dr. Carl H. Eigenmann, to whom more than to any other we are indebted for our knowledge of both the blind fishes of the caves and the fish fauna of the fresh waters of South America.

Typhlobelus Myers, new genus

Resembling *Pygidianops* in most characters, this genus differs as follows: Eyes vestigial, visible as minute black dots. Body greatly elongate, subterete in cross-section; depth 12 or 13 in standard length. Snout elongate, trowel-shaped, not merging into the membranous wings of the barbels. No vestige of a pectoral fin. Occiput bulbous behind. Caudal fin reduced. Teeth more widely spaced in jaws. Gill membranes as in *Pygidianops*. Mouth a little anterior to insertion of rostral barbels.

Genotype the following species.

Typhlobelus ternetzi Myers, new species

Plate 52, fig. 2; Pl. 53, figs. 6, 7, 8

Anal fin 5. Myomeres 38 to origin of anal fin, number uncertain posteriorly, the total number probably about 50. Caudal fin rounded. Depth 12 to 13 in standard length. Body less compressed than in *Pygidianops*, subterete in cross-section. Head 8.8. Distance from anal origin to caudal base 3.3 in standard length. The barbels are stiff, but less so than in *Pygidianops;* their structure is similar. A rayless membrane along dorsum, and another from behind anal, to caudal. As in *Pygidianops* there is a band of reticulate tissue from pectoral region to above anal fin, set lower than in the other genus, and another at the base of the dorsal membrane for its entire length. A series of thin bones beneath the integument in the opercular region, perhaps branchiostegals.

White, colorless. A slight dark shade on top of head. Eye black.

Holotype: No. 11,118 C. A. S., 33.5 mm. in standard length, from **rock pools below São Gabriel Rapids, Rio Negro, Brazil,** Feb. 1, 1925, Dr. Carl Ternetz.

There are three paratypes, slightly smaller than the type, and from the same locality. One of them is in the collection of Stanford University.

It seems fitting that this peculiar little fish should bear the name of the late Dr. Carl Ternetz, whose valiant labors, while collecting these fishes in a little-known and fever-laden region, were the ultimate cause of his death.

Glanapteryx anguilla Myers

Plate 54, figs. 9, 10, 11

Bull. Mus. Comp. Zoöl., 1927, LXVIII, p. 128.

This little fish, known from a single specimen collected at the same time and place as the above two, has very small but functional eyes. The anal as well as the dorsal is absent. What appear to be small pelvics are present, and the caudal, which is well formed in the other two genera, is reduced to a fringe. The fish differs greatly in appearance from the two blind genera, being dark brown in color and eel-like in form. The barbels are not stiff or fringed and the snout is blunt.

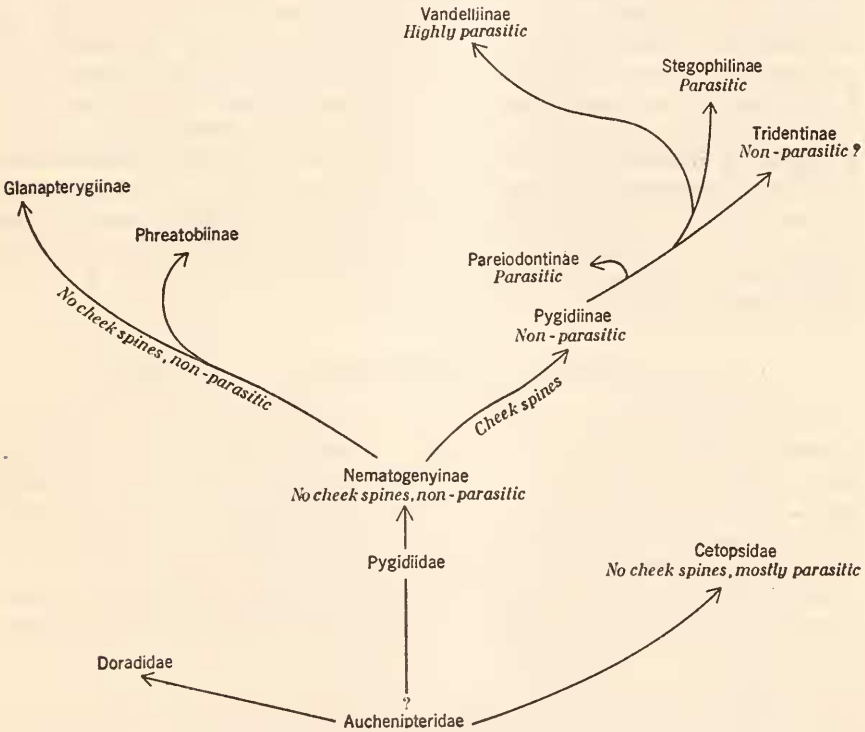
DISCUSSION

The question of the habitat of the Glanapteryginae is unanswered. Dr. Ternetz is dead, and the data he gave ("rock pools below São Gabriel Rapids") are all that are known. The tiny mouth and weak, unspecialized dentition make me fairly sure that they are not parasitic. Very probably they spend their time buried in the sand, like *Pygidium*. The two blind genera were undoubtedly of a glassy translucency in life.

In spite of the considerable differences between *Glanapteryx* and the two blind genera, it would appear that they are not distantly related. The absence of the cheek spines and dorsal fin and the presence of nasal barbels show similarity and distinguish the group as a whole from most other pygidiids. Of course it may be argued that the absence of the dorsal, as well as the reduction of the paired fins, is merely a mark of independent degeneration, as the reduction of the eyes may well be, and, as such, of no significance as an indicator of phylogenetic relationship. While recognizing this possibility, I still feel that these fishes really are rather closely related. For one thing, the absence of cheek spines throws the three genera into a group with *Nematogenys*, the most primitive pygidiid, a group that, outside *Nematogenys* and the Glanapteryginae, includes only the strange, blind *Phreatobius cisternarum* of the Island of Marajó. I rather incline to believe that the absence of cheek spines is a primitive character which indicates the derivation of *Phreatobius* and the Glanapteryginae from some form similar to *Nematogenys*.

Moreover, the discovery of *Glanapteryx* and the blind genera does much to reduce the apparent gap between *Phreatobius* and *Nematogenys*, and to make it appear that the zoogeographically natural association of *Phreatobius* with the Pygidiidae is more reasonable than Fuhrmann's suggestion that the relations of *Phreatobius* are to be sought among the Afro-Asiatic Clariidae. It is true that the blind African clariid, *Uegitglanis*, described subsequent to Fuhrmann's work, resembles *Phreatobius* even more than the clariids known to him, but this resemblance is superficial.

While discussing the relationships of the blind genera, it seems useful to present a brief résumé of my tentative conception of the phylogenetic history of the pygidiid subfamilies. I do this in the form of a sketch (Text-fig. 1), upon which some comments are necessary. Little is known of the osteology of the family except for the Pygidiinae and *Plectrochilus* (= *Urinophilus*). But *Nematogenys*, as Eigenmann has said, seems to be the most primitive genus and I presume that it originated from the still more primitive Auchenipteridae (now reunited with the Doradidae by Gosline).



Text fig. 1. Sketch of suggested phylogeny of the subfamilies of Pygidiidae. The origin of the family from the Auchenipteridae is highly speculative, although the relationship of Cetopsidae to that family seems fairly certain. If the Tridentinae are not parasitic it is probable that their immediate ancestors were.

From the Auchenipteridae almost certainly arose the Cetopsidae, which Regan unites with the Pygidiidae, but which I prefer to regard as a distinct family, rather far removed from the pygidiid stem.[1]

From the Nematogenyinae, as indicated above, I believe the Glanapteryginae and Phreatobiinae to have developed, but they have travelled a long road. The Pygidiinae are practically identical with the Nematogenyinae except for the reduced maxillary and pectoral spine and the acquisition of interopercular and opercular spines. From the Pygidiinae, or perhaps from a parallel line, came the truly parasitic subfamilies, which all possess one or the other, or both patches of cheek spines. The Stegophilinae have specialized on a wide mouth and sucking disk, with which they attach themselves to other nematognaths, or to other aquatic animals, in order to use their fine teeth to rasp the skin to draw the blood upon which they feed. The Vandelliinae have developed an even more diabolical dentition, with which they attempt to penetrate the body wall of large nematognaths, and there suck blood, but they lack the large sucking disk of the Stegophilinae. To the Vandelliinae belong all the species of *candirú* that are accused of entering the human urethra (undoubted cases are on record of entrance into both male and female) and all those tiny forms that live in the gills of large fishes and suck blood from the gill filaments. The habits of the Tridentinae are unknown, but even if they are not parasitic, I believe that they originated from the stegophiline stem or perhaps even from some genus of that subfamily. *Haemomaster* is very suggestive of *Tridens*. The parasitic *Pareiodon* seems to be much closer to *Pygidium* than the others are; consequently I place it near the Pygidiinae. It has not the inferior mouth of the Vandelliinae, Stegophilinae, and Tridentinae.

A Rearrangement of the Genera of Pygidiidae

The Pygidiidae were revised by Dr. Eigenmann in 1918 (Mem. Carnegie Mus., VII, pp. 259-398). More recently (1927, Mem. Nat. Acad. Sci., XXII, p. 37) he raised *Nematogenys* to family rank. Since several new genera have been described recently, and at least one of Eigenmann's main group characters shown to be inconstant, it seems best to regroup the generic categories.

With Dr. Eigenmann I would exclude the Cetopsidae, but *Nematogenys* is so evidently related to *Pygidium* that I think it better to retain it in the Pygidiidae. *Phreatobius* is included, for reasons given above.

[1]The development of bloodsucking habits in both the Cetopsidae and the more specialized and highly modified pygidiids is notable. As a matter of fact, it has been doubted that the cetopsids are parasitic; their large size would appear to make such habits scarcely credible. However, Mr. William G. Scherer, of Pevas, Loreto, Peru, has sent me a halfgrown *Cetopsis* that he caught when it attached itself to his leg and attempted to rasp the skin with its teeth and to suck blood. The Indians of the Amazon have long known that *Cetopsis* is a *candirú* or bloodsucker; this knowledge is preserved in the specific name of *Cetopsis candiru*.

Key to the Genera

1*a*. No opercular or interopercular spine patches.

2*a*. Pectoral fin with a spine; mental and nasal barbels present; dorsal fin inserted over pelvics. (Subfamily Nematogenyinae)..... ..... *Nematogenys* Girard 1854.

2*b*. Pectoral fin without spine or entirely absent.

3*a*. Dorsal fin absent; nasal, rostral and maxillary barbels present; no mental barbels; anal (if present) and caudal fins not confluent. (Subfamily Glanapteryginae).

4*a*. Anal fin present; eyes degenerate; caudal fin small but well developed.

5*a*. No externally visible vestige of eyes; snout shovel-shaped; pectoral fin present; form compact, compressed..... ..... *Pygidianops* Myers 1944.

5*b*. A vestigial eye present; snout trowel-shaped; no pectoral fin; body very elongate, subterete..... *Typhlobelus* Myers 1944.

4*b*. Anal fin absent; eyes functional; caudal degenerated into a fringe; eel-shaped..... *Glanapteryx* Myers 1927.

3*b*. Dorsal fin present; only maxillary and mental barbels present; anal and caudal fins confluent. (Subfamily Phreatobiinae)..... ..... *Phreatobius* Goeldi 1904.

1*b*. A patch of spines on the interoperculum and usually on the operculum.

6*a*. Mouth subterminal, not sucker-like.

7*a*. Gill membranes free or narrowly connected with isthmus; caudal rounded to emarginate; head flattened; nasal barbel present. (Subfamily Pygidiinae).

8*a*. Opercle with long dermal flap; maxillary bone larger than its barbel..... *Scleronema* Eigenmann 1918.

8*b*. Opercle without dermal flap; maxillary very small.

9*a*. Dorsal fin long; caudal peduncle subterete.. *Hatcheria* Eigenmann 1909.

9*b*. Dorsal fin shorter; caudal peduncle compressed.

10*a*. Pelvic fins present..... *Pygidium* Meyen 1835.

10*b*. Pelvic fins absent..... *Eremophilus* Humboldt 1811.

7*b*. Gill membranes confluent with isthmus; caudal deeply forked; head rather deep; no nasal barbel. (Subfamily Pareiodontinae).... ..... *Pareiodon* Kner 1855.

6*b*. Mouth inferior, sucker-like.

11*a*. Anal fin short, with 7 to 11 rays, its origin behind or rarely under the base of the dorsal fin.

12*a*. Rami of mandible meeting anteriorly; mouth wide; teeth many and fine, in bands or rows. (Subfamily Stegophilinae).

13*a*. Lips wide and extrusible, when extruded extending backward in points behind corners of mouth, normally folded into mouth; opercular spines absent.... *Apomatoceros* Eigenmann 1922.

13*b*. No backwardly extending extrusible lips; opercular spines present.

14*a*. Eyes lateral, wide apart, and staring; head very flat and depressed; interorbital nearly as wide as head and almost perfectly flat (as in *Tridens*)..... *Haemomaster* Myers 1927.

14*b*. Eyes superior, close together, and usually partly hidden by the cheeks when viewed from the side; interorbital narrow, usually concave.

15*a*. Gill membranes united, free from the isthmus.....
.....*Acanthopoma* Lütken 1892.

15*b*. Gill membranes confluent with the isthmus.

16*a*. Caudal fin deeply forked, the lobes rather long and pointed; head and body rather deep and compact, the caudal peduncle slender; body with wide, dark, vertical bands.....
.....*Pseudostegophilus* Eigenmann and Eigenmann 1889.

16*b*. Caudal fin emarginate, truncate, or rounded; body rather slender; head depressed; body spotted or plain.

17*a*. Accessory procurrent caudal rays numerous and conspicuous; tail tadpole-like, but not sharply pointed.
.....*Ochmacanthus* Eigenmann 1912.

17*b*. Accessory procurrent caudal rays few and relatively inconspicuous; caudal not tadpole-like.

18*a*. Operculum with only two spines.....
.....*Henonemus* Eigenmann and Ward 1907.

18*b*. Operculum with four or more spines.

19*a*. Origin of pelvic fins almost equidistant from snout-tip and caudal origin.....
.....*Homodiaetus* Eigenmann and Ward 1907.

19*b*. Pelvic origin 1.5 to 2 times as far from snout-tip as from base of caudal fin.....
.....*Stegophilus* Reinhardt 1859.

12*b*. Rami of mandible separated anteriorly; mouth narrow; teeth large and few. (Subfamily Vandelliinae).

20*a*. Gill membranes united, free from isthmus; teeth present in lower jaw; rami of mandible rather close together.....
.....*Paracanthopoma* Giltay 1935.

20*b*. Gill membranes confluent with the isthmus.

21*a*. A large claw-like tooth at the end of each maxillary (scarcely visible without dissection); two series of depressible teeth in the middle of the upper jaw flanked laterally by a single series of much smaller teeth; two short series of teeth on ends of mandibular rami; caudal subtruncate.....
.....*Branchioica* Eigenmann 1918.

21*b*. No claw-like tooth at end of maxillary (not verified in *Paravandellia*).

22*a*. A few depressible teeth in a single series in middle of upper jaw; caudal rounded or emarginate.

23*a*. Mandible devoid of teeth.....
.....*Vandellia* Cuvier and Valenciennes. 1846.

23*b*. A patch of minute teeth on each ramus of mandible....
.....*Plectrochilus* Miranda-Ribeiro 1917.

22*b*. Several series of depressible teeth in middle of upper jaw flanked by a single series of smaller teeth at each side.

24*a*. A small series of teeth at extremities of the mandibular rami; caudal emarginate.....
.....*Parabranchioica* Devincenzi and Vaz-Ferreira 1939.

24*b*. Mandible devoid of teeth; caudal with upper lobe elongated.....*Paravandellia* Miranda-Ribeiro 1912.

11*b*. Anal fin long, with 15 to 25 rays, its origin in front of that of dorsal fin. (Subfamily Tridentinae).

25*a*. Opercular and interopercular patches of spines confluent with each other; gill membranes confluent with isthmus ..... *Miuroglanis* Eigenmann and Eigenmann 1889.

25*b*. Opercular and interopercular spine patches distinct from each other; gill membranes united, free from isthmus; eyes lateral, far apart; interorbital wide and flat.

26*a*. Body not greatly elongate, depth four to eight times in standard length; head 5.0 to 6.5 in standard length; interopercular spines four to eight in number.

27*a*. Opercular spines 10; two maxillary barbels present; nasal barbel present..... *Tridentopsis* Myers 1925.

27*b*. Opercular spines 6; one maxillary barbel; nasal barbel absent ..... *Tridensimilis* Schultz 1944.

26*b*. Body greatly elongate, depth of body 13 times in standard length; head about nine times in standard length; interopercular spines reduced to three or four..... ..... *Tridens* Eigenmann and Eigenmann 1889.

Incertae Sedis: Pleurophysus Miranda-Ribeiro 1918. It is possible that this genus is the same as the more recently described *Paracanthopoma* of Giltay.

In connection with the above review of the pygidiid genera it seems worthwhile to present illustrations of some unfigured genera and species of this family which I have described from among the collections of Dr. Ternetz in the museum of the Academy. These species are listed below.

Pygidium gabrieli Myers

Plate 55, fig. 12

Copeia, 1926, no. 156, p. 151 (São Gabriel Rapids, Rio Negro, Brazil).

Haemomaster venezuelae Myers

Plate 55. fig 13.

Bull. Mus. Comp. Zoöl., 1927, LXVIII, p. 131 (Playa Matepalma, Rio Orinoco, Venezuela).

Stegophilus septentrionalis Myers

Plate 56, fig. 14

Bull. Mus. Comp. Zoöl., 1927, LXVIII, p. 130 (Santa Barbara, Rio Orinoco, Venezuela).

Ochmacanthus alternus Myers

Plate 56, fig. 15

Bull. Mus. Comp. Zoöl., 1927, LXVIII, p.129 (Caño de Quiribana, near Caicara, Rio Orinoco, Venezuela).

Ochmacanthus orinoco Myers

Plate 56, fig. 16

Bull. Mus. Comp. Zoöl., 1927, LXVIII, p. 130 (Playa Matepalma, Rio Orinoco, Venezuela).

ADDENDUM

Except for the phylogenetic diagram and its accompanying discussion, the present paper stands very much as it was first written, almost fifteen years ago. The long delay in its presentation was due chiefly to a somewhat fitful search for an artist competent to draw detailed sketches of the heads of the new blind genera. The paper was finally submitted to the Academy for publication in May 1942, but wartime difficulties have delayed its printing. This delay enabled me to revise parts of the key, to include a new genus just described by Schultz, and to insert the phylogenetic diagram and a brief explanation of it. This was done while I was in Brazil, through the kind help of Miss Margaret Storey and Professor G. F. Ferris of Stanford.

Several notes on some of the genera recognized in the key are absolutely necessary, in the light of further information. Mr. Paulo de Miranda-Ribeiro of the Museu Nacional in Rio has shown me a small *Pygidium* from Minas Geraes that entirely lacks any external vestige of pelvic fins. He desired to refer his fish to *Eremophilus* but upon my advice decided not to do so. The pelvic fins of many fishes seem to be unstable genetically and specimens of many species of abdominal fishes are frequently found to lack the pelvics. Sometimes it would appear almost as if the presence or absence of ventral fins depended upon a unit character, genetically. It was long ago noted by Günther that burrowing fishes more frequently lack the pelvics than others. It may be added that elongate fishes do so more frequently than more robust species. *Pygidium* is both elongate and a burrower. I do not recall seeing a specimen of any species normally possessing truly thoracic pelvics that lacked these fins. At any rate, this anomalous *Pygidium* without pelvics brings up the validity of the generic separation of the sole species of *Eremophilus*, a genus separated from *Pygidium* only by the constant absence of these fins. The case bears some analogy to that of *Channa* and *Ophicephalus*. Myers and Shapovalov showed that *Channa* (lacking pelvics) was based upon a type species that turned out to be chimaerical; the type species consisted solely of anomalous (pelvicless) examples of a common *Ophicephalus*. Recent work in India has proved that we were correct. But *Channa* was an older name and replaced the better-known *Ophicephalus*. In the present

instance *Eremophilus* is the older name and would replace the better-known *Pygidium* if the two genera were merged, but it must be noted that the basis for merging is much less than with the Asiatic forms. Moreover the genotype of *Eremophilus* is no chimera, but always lacks the pelvics, and we have but one small, anomalous fish upon which to base the name change, not only of a very large genus, but of a family as well. Since, in my opinion, taxonomy is a study of phylogeny and nomenclature is no real part of it, I see nothing wrong in retaining the name *Eremophilus* for a species that always lacks pelvics, and *Pygidium* as a genus that may, very rarely, produce an anomalous individual lacking them. Any other course leads to shifting over a hundred species to another genus, and of changing the well-known family name *Pygidiidae*. I may point out that, according to the rules followed by many zoologists and especially entomologists, the new name would not be Eremophilidae, but a name with an –idae ending based upon the oldest existing subfamily name (except, of course, Pygidiinae). Probably either Nematogenyidae or Stegophilidae would be the correct form.

Some of the other genera that I still continue to recognize in the key have comparatively little basis. *Homodiaetus* is very weakly differentiated from *Stegophilus* and probably should be sunk in synonymy, and I should not be surprised to see *Henonemus* follow the same fate when more material and more forms are known.

In the Tridentinae, I have recognized Schultz's *Tridensimilis*, though I have a strong feeling that this will ultimately prove to be inseparable from *Tridentopsis*. The only certain and well-marked character that separates them is the number of opercular spines (six versus ten). The characters of the maxillary and nasal barbels are already obscured by the two lesser known species, *Tridens brevis* and *Tridentopsis tocantinsi*, but I have left the barbel characters in the key (as characters of the genotypic species) on the faint chance that either *brevis* or *tocantinsi*, or each of them, may turn out to represent a different, well-marked genus.

Vandellia and *Plectrochilus* are two genera that I feel will eventually be merged. The presence versus the absence of a patch of minute teeth on each ramus of the mandible are not only characters subject to the condition of museum specimens and the care (or lack of it) of ichthyologists, but also characters that in some

instances may approach each other so closely as to have little value. It should be remarked here that, in Rio de Janeiro, I have discovered the late Alipio de Miranda-Ribeiro to have described (in 1917) a genus that was unknown not only to Dr. Eigenmann, but also to the *Zoological Record*. This fish, *Plectrochilus machadoi*, turned out, upon examination of the poorly preserved type, to be identical with *Urinophilus diabolicus* Myers 1927. Also, the generic name *Plectrochilus* of 1917 must replace *Urinophilus* of 1920. *Urinophilus* was first proposed by Eigenmann in 1918 in a peculiar way. He had two groups of species, one with and one without mandibular teeth. He did not know to which group *Vandellia* belonged, so he put all the species tentatively in *Vandellia* and proposed *Urinophilus* (*in vacuo*, so to speak) for whichever group *Vandellia* did not turn out to represent. Two years later he settled the problem and *Urinophilus* must date from 1920.

Plectrochilus machadoi Miranda-Ribeiro, both genus (genotype by monotypy *P. machadoi*) and species, was described on page 50 of the following paper:

Miranda-Ribeiro, Alipio de. De Scleracanthis fluvio "Solimões" anno MCMVIII a cl. F. Machado da Silva duce brasiliense inventis et in Museo Urbis "Rio de Janeiro" servantis per classis dispositis vel descriptis. In: *Revista da Sociedade Brasileira de Sciencias*, Rio de Janeiro, No. 1, pp. 49-52. 1917.

G. S. Myers
Rio de Janeiro
May 4, 1944.